b.) Remarks

Turning first to the Office Action Summary Sheet, Applicants note that Claims 1-16 and 54-55 were pending in the application. Claims 19-53 were withdrawn from consideration, and Claims 1-16, 54 and 55 were rejected.

Claims 1, 3-7, 10, 12, 54 and 55 are amended in various particulars as indicated hereinabove and Claims 8-9 are cancelled. New Claims 55-62 are added. Support is found throughout the application, and in particular at paragraph 0003, paragraphs 0042 through 0049 and paragraphs 0052 through 0053 of the specification. No new matter is introduced.

Turning now to the merits, the remainder of these Remarks is set forth under appropriate subheadings for the convenience of the Examiner.

Rejection of Claims 1-16, 54 and 55 Under 35 U.S.C § 112, Second Paragraph

Claims 1-16, 54 and 55 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly clam the subject matter which applicant regards as the invention.

Claim 1 has been amended to specify that at least a portion of a static electricity produced prior to or during filling the panel is discharged. Applicants note that Claim 54 does not mention static electricity. Claim 55 has been amended to specify that at least a portion of a static electricity produced prior to or during step (d) is discharged.

Applicants believe that present Claims 1-7, 10-16, 54 and 55 meet the requirements of 35 U.S.C. § 112, second paragraph.

Rejection of Claims 1, 3 and 4-11 Under 35 U.S.C. § 103(a)

Claims 1, 3 and 4-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rocchio et al. (US 2004/0003866 A1) in view of Niijima et al. (JP 08268534). This rejection is respectfully traversed for the following reasons.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references. *In re Sang Su Lee, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).* The cited publications should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made. *In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).*

Rocchio et al. address the filling of a large amount of a pharmaceutical powder into a receptacle from which the powder can be aerosolized for inhalation by a user. As discussed at paragraph 0003 of Rocchio et al., receptacles contemplated by the reference are those suitable for storing pharmaceutical formulations, such as capsules, blisters, blister packs, bottles and vials.

The reference teaches overfilling the receptacle by providing extension **160** which can hold an overfill portion of the dose. (See, e.g., **FIG. 1C.**) Overfill portion **165** is forced from the extension into the receptacle by plunger **170**, as shown, for instance, in **FIGS 2A, 2B, 2D and 2E**. As discussed in paragraph 0036 and illustrated in **FIG. 5A** of the reference, the overfill portion **165** can be forced into receptacle **125** by vibration from actuator **225**.

The reference neither teaches nor suggests a method for filling a panel such as specified in Applicant's Claim 1, as currently amended, or subjecting the panel to a vibratory motion, filling at least a portion of the internal volume of the panel with the particulate matter while the panel is being subjected to the vibratory motion, and repeating these steps until the internal volume of the panel has been filled with the desired amount of particulate matter, as specified in Applicants' Claim 1. Rather, Rocchio et al. teach overfilling a receptacle by providing an extension such as sleeve **195**, followed by compacting.

Furthermore, there is no disclosure or suggestion in Rocchio et al. regarding static electricity being produced or discharged as specified in Applicants' claims.

A computer-generated English language translation of Niijima et al. is submitted with an Information disclosure Statement filed concurrently herewith.

The teachings of Niijima et al. relate to a powder supply apparatus for analysis and measurement, as discussed, for instance, at paragraphs 0001 and 0004 of the translated document. The apparatus includes hopper 3, gutter 4 and shaker 2, which imparts vibration of the hopper and gutter, thus releasing the powder to receiving vessel 16.

One problem faced by Niijima et al. is that of static electricity generated in hopper 3 and gutter 4 by the vibration of shaker 2, causing powder residue to become stuck on the inner surfaces of the hopper and gutter. As discussed at paragraph 0004 of the translated document, this residue can contaminate a subsequent powder sample, affecting the precision of measurement and analysis.

To eliminate static electricity in the fine particle feeder, Niijima et al teach spraying the powder in hopper 3 and gutter 4 with humidified air.

The reference does not address discharging at least a portion of a static electricity produced prior to or during filling a panel and, in fact, Niijima et al. do not even address filling a panel. Rather, the cited document is directed to supplying powder, in precise quantity, to receiving vessel 16.

Thus neither reference, alone or in combination, teaches or suggests a method for filling a panel having an internal volume with particulate matter, the method comprising the steps of: (a) providing a panel having a length, width, and an internal volume, (b) providing a supply of particulate matter, (c) subjecting the panel to a vibratory motion, (d) filling at least a portion of the internal volume of the panel with the particulate matter while the panel is being subjected to the vibratory motion, (e) repeating steps (c) and (d) until the internal volume of the panel has been filled with the desired amount of particulate matter, wherein at least a portion of a static electricity produced prior to or during filling the panel is discharged.

Furthermore, as previously discussed by Applicants, one of ordinary skill in the art, at the time the invention was made, would not have considered combining the teachings of Rocchio et al. with those of Niijima et al.

Pharmaceutical formulations often are adversely affected by humidity and the need for maintaining low moisture levels with respect to powder formulations is explicitly noted by Rocchio et al. At paragraph 0051, the reference states:

> In particular, excipient materials can often function to further improve the physical and chemical stability of the active agent, minimize the residual moisture content and hinder moisture uptake, and to enhance particle size, degree of aggregation, particle surface properties, such as rugosity, ease of inhalation, and the targeting of particles to the lung.

For a receptacle that is a multi-layered package, Rocchio et al. teach employing a metal containing layer "sufficiently thick to substantially prevent a significant amount of moisture from passing therethrough". Rocchio et al. at paragraph 0037.

And at paragraph 0059, Rocchio et al. define specific moisture levels allowed in dry powders used for filling the receptacle:

> These dry powders have a moisture content below about 10% by weight, usually below about 5% by weight and preferably below about 3% by weight.

It is respectfully submitted that one of ordinary skill at the time the invention was made, aware of the harmful effects of moisture uptake on pharmaceutical formulations and of the carefully defined and maintained moisture content of the dry powders of Rocchio et al., would have had no reason, incentive or motivation to spray them with humidified air, as taught by Niijima et al. On the contrary, such a person would have recognized that exposing the Rocchio et al. formulations to humidity would have been likely to impair or destroy important powder characteristics.

Furthermore, combining the two references would change the principle of operation of Niijima et al. Specifically, the combination would result in imparting vibration to receiving vessel 16 of Niijima et al., possibly rendering the arrangement disclosed in the document unsuitable for its original purpose, causing powder to scatter and/or miss the receiving vessel.

Since the two cited references are intended for different purposes, address different problems and employ different approaches, there can be no reasonable expectation of success from the suggested combination.

The arguments presented with respect to Claim 1 also are applied to claims dependent on Claim 1.

With respect to Claims 3-7, Applicants further note that neither reference, separately or in combination, teaches or suggests that the receptacle of Rocchio et al. or the receiving vessel of Niijima et al. is subjected to a vibratory motion. and further subjected to a tamping motion directed along the length of the receptacle or vessel disclosed in the cited documents.

As noted above, Niijima et al. do not teach subjecting receiving vessel 16 to vibration. Nor does the reference provide any teaching, suggestion or even a hint regarding tamping.

At paragraph 0035 and in **FIG. 5A** and **FIG. 5C**, Rocchio et al teach, respectively, either vibration or use of tamp **250**. However, Rocchio et al. neither disclose nor suggest combining the two. Applicants have examined the text referenced in the paragraph bridging pages 4 and 5 of the Office Action and note that it is acoustic energy, such as sound waves **245** of **FIG. 5B**, that can be used "alternatively or additionally" to vibration. In contrast, the use of tamp **250** is viewed by Rocchio et al. as an approach alternative to vibration, as clearly stated at page 4, lines 10-12 of the right hand column:

> In another version, as shown in **FIG. 5C**, a tamp **250** may be provided to impact the sleeve **195** or other part to force the powder to compact.

It is respectfully submitted therefore that a prima facie case of obviousness has not been established and that Claims 1, 3 and 4-7 and 10-11 meet the requirements of 35 U.S.C. § 103(a) over Rocchio et al. in view of Niijima et al.

Rejection of Claim 2 Under 35 U.S.C. § 103(a)

Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the modified Rocchio et al. (as discussed above) in view of Krush et al. (6250792). This rejection is respectfully traversed for the following reasons.

Applicants have assumed that the phrase "modified Rocchio et al." refers to the combination of Rocchio et al. and Niijima et al. set forth under Item 4 of the Office Action.

As discussed above, present Claim 1 meets the requirements of 35 U.S.C. § 103(a) over Rocchio et al. in view of Niijima et al.

Krush et al. disclose an integrated vibratory adapter device which includes a centrifugal vibratory apparatus for generating a single frequency sinusoidal vibration. Krush et al., Claim 1. As discussed at Col. 5, lines 8-19, vibratory devices can be employed "for uses such as screening of cohesive powder and sticky materials, compacting of concrete mixtures and powders, tamping of soil and asphalt, shaking-out of molds and casting, crushing, milling and mixing of powders, deburring and finishing of casting with intricate shaping, bin activation, and so on".

There is no disclosure, hint or suggestion in Krush et al. regarding a method for filling a panel having an internal volume with particulate matter, the method comprising the steps of: (a) providing a panel having a length, width, and an internal volume, (b) providing a supply of particulate matter, (c) subjecting the panel to a vibratory motion, (d) filling at least a portion of the internal volume of the panel with the particulate matter while the panel is being subjected to the vibratory motion, (e) repeating steps (c) and (d) until the internal volume of the panel has been filled with the desired amount of particulate matter, wherein at least a portion of a static electricity produced prior to or during filling the panel is discharged.

Thus Krush et al. do not remedy deficiencies discussed with respect to Rocchio et al. in view of Niijima et al. Therefore Claim 2 also meets the requirements of 35 U.S.C. §103(a) over Rocchio et al. modified by Niijima et al., in view of Krush et al.

Rejection of Claim 12 and 13 Under 35 U.S.C. § 103(a)

Claims 12 and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Rocchio et al. (as discussed above) in view of Sato et al. (US2004/0134560). This rejection is respectfully traversed for the following reasons.

Claims 12 and 13 depend on Claim 1 and, as noted above, present Claim 1 meets the requirements of 35 U.S.C. § 103(a) over Rocchio et al. in view of Niijima et al. Furthermore, neither Rocchio et al. nor Niijima et al, separately or in combination disclose or suggest ionizing the atmosphere surrounding a point where the particulate matter enters the internal volume of the cartridge, or that the atmosphere is ionized using a corona discharge.

Deficiencies pointed out with respect to Rocchio et al. and Niijima et al. are not cured by Sato et al.

As previously noted, Sato et al. disclose a method for filling a developer cartridge with toner. An example of the developer cartridge is shown FIG. 9 and a schematic diagram of the filling device used for filling the cartridge is shown in FIG. 7.

Once filled, the cartridge is mounted in an image forming device, e.g., a printer, a photocopier or a facsimile device. The charging device **29** discussed in the Office Action is part of the image forming device, as seen, for instance, at paragraphs 0070 and 0071 of the reference:

> The charging device **29** is disposed above the photosensitive drum **27** and separated a predetermined distance therefrom so as not to contact the photosensitive drum **27**. The charging device **29** is a positive charging scorotron charger having a charging wire formed of tungsten or the like from which a corona discharge is generated. By switching on and off a charging bias circuit (not shown), the charging device **29** applies a uniform charge of positive polarity across the entire surface of the photosensitive drum **27**.
>
> When the developer cartridge **24** is mounted on the drum cartridge **23**, the developer roller **31** is positioned downstream of the charging device **29** in the rotating direction of the photosensitive drum **27** (clockwise in the drawing) and is capable of rotating in the direction indicated by the arrow (counterclockwise in the drawing). The developer roller **31** includes a metal roller shaft covered by a roller formed of a conductive rubber material. A developer bias circuit (not shown) applies a developer bias to the developer roller **31**.

The reference describes the image forming process at paragraphs 0086-0087:

> The charging device **29** charges the photosensitive drum **27** to achieve a surface potential of about 1000 V, for example. Next, the photosensitive drum **27** rotating in the direction of the arrow (clockwise in FIG. 2) receives the irradiated laser light. The laser light is irradiated such that parts to be developed along the main scanning line of the paper **3** are irradiated while parts that are not to be developed are not irradiated. The surface potential at parts irradiated by laser light (bright areas) drops to about 100 V, for example. The laser light is irradiated also in a sub scanning direction (the direction in which the paper **3** is conveyed) as the photosensitive drum **27** rotates. The portions not irradiated by laser light (dark areas) and the bright areas form invisible electrical images, that is, electrostatic latent images on the surface of the photosensitive drum **27**.
>
> Toner accommodated in the toner accommodating chamber **34** is conveyed into the developing chamber **37** by the rotation of the agitator **36** and supplied onto the developer roller **31** by the rotation of the supply roller **33** within the developing chamber **37**. At this time, the toner is positively thribocharged between the supply roller **33** and the developer roller **31**. The toner carried on the developer roller **31** is adjusted to a uniform thin layer by the thickness regulating blade **32**. A positive bias of about 300-400 V, for example, is applied to the developer roller **31**. As the developer roller **31** rotates, the positively charged toner carried on the surface thereof comes into contact with the photosensitive drum **27** and is transferred to the electrostatic latent image formed on the surface thereof. That is, since the potential of the developer roller **31** is lower than the potential of a dark area (+1000 V) and higher than the potential at a bright area (+100 V), the toner is selectively transferred to bright areas having the lower potential. In this way, a developing process is performed to form a visible image with toner on the surface of the photosensitive drum **27** as a developer image.

Therefore, as seen above, the corona device discussed in the Office Action is part of the image forming equipment and what the reference teaches is charge manipulation that takes place with material already stored in the cartridge.

Thus the reference does not teach, suggest or hint to discharging at least a portion of a static electricity produced prior to or during filling the cartridge. As with the Roche et al. and Niijima et al., Sato et al. neither disclose, hint or suggest a method for filling a panel having an internal volume with particulate matter, the method comprising the steps of: (a) providing a panel having a length, width, and an internal volume, (b) providing a supply of particulate matter, (c) subjecting the panel to a vibratory motion, (d) filling at least a portion of the internal volume of the panel with the particulate matter while the panel is being subjected to the vibratory motion, (e) repeating steps (c) and (d) until the internal volume of the panel has been filled with the desired amount of particulate matter, wherein at least a portion of a static electricity produced prior to or during filling the panel is discharged. Also, the reference does not suggest ionizing the atmosphere surrounding a point where the particulate matter enters the internal volume of the cartridge, or that the atmosphere is ionized using a corona discharge.

It is respectfully submitted that Claims 12 and 13 meet the requirements of 35 U.S.C. §103(a) over Rocchio et al. in view of Sato et al.

Rejection of Claims 14-16, 54 and 55 Under 35 U.S.C. 103(a)

Claims 14-16, 54 and 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Rocchio et al. (as discussed above). This rejection is respectfully traversed for the following reasons.

Claims 14-16

Claims 14-16 depend on Claim 1, as presently amended. As in the case of Claim 1, Claims 14-16 are directed to a method for filling a panel having an internal volume with particulate matter, the method comprising the steps of: (a) providing a panel having a length, width, and an internal volume, (b) providing a supply of particulate matter, (c) subjecting the panel to a vibratory motion, (d) filling at least a portion of the internal volume of the panel with the particulate matter while the panel is being subjected to the vibratory motion, (e) repeating steps (c) and (d) until the internal volume of the panel has been filled with the desired amount of particulate matter, wherein at least a portion of a static electricity produced prior to or during filling the panel is discharged.

In addition, Claims 14-15 specify that the particulate matter comprises metal oxide aerogel particles, while Claim 16 specifies that the particulate material comprises organic aerogel particles.

As discussed above, Claim 1 meets the requirements of 35 U.S.C. §103(a) over the combination of Rocchio et al. and Niijima et al. proposed in the Office Action. Furthermore, neither reference, separately or together, teaches or suggests the materials embraced by Claims 14-16.

Therefore, instant Claims 14-16 meet the requirements of 35 U.S.C. §103(a) in view of the cited references.

Claims 54-55

Rocchio et al. address pharmaceutical formulations and in particular dry powders for drug delivery by inhalation. As discussed at paragraph 0003 of Rocchio et al., receptacles contemplated by the reference are those suitable for storing pharmaceutical formulations, such as capsules, blisters, blister packs, bottles and vials.

Rocchio et al. neither teach nor suggest filling a panel such as specified in Applicant's Claim 54, as presently amended. While the Rocchio et al. reference devotes more than a dozen paragraphs, specifically paragraphs 0046 through 0059, to describe powders contemplated for use in their device, the reference does not provide even a hint regarding aerogel particles.

There is also no disclosure or suggestion in Niijima et al. regarding filling a panel with materials embraced by Applicants' Claim 54.

Thus the method of present Claim 54 is neither taught, nor suggested by Rocchio et al. and Niijima et al., taken separately or in combination.

Furthermore, it is respectfully submitted that filling a receptacle with materials such as those described in paragraphs 0046 through 0059 of Rocchio et al. can present different challenges from those faced when filling a panel with aerogel particles. For instance, as noted above, powders described in Rocchio et al. are carefully controlled for moisture content and uptake. Thus one of ordinary skill in the art at the time the invention was made would have had no reason to apply the teachings of Rocchio et al., modified as set forth in the Office Action by Niijima et al., to aerogel particles.

Reasons presented above are also applied to dependent Claim 55, as presently amended to specify that at least a portion of a static electricity produced prior to or during step (d) is discharged.

Therefore, Claims 54 and 55 also meet the requirements of 35 U.S.C. §103(a) over Rocchio et al. in view of Niijima et al.

New Claims 56-62

Arguments presented above also are applied to new dependent Claim 56-62. In addition, Applicants note that neither Rocchio et al. nor Niijima et al., alone or combined, discloses a method for filling a panel having one or more channels or a panel comprised in a glazing system, as specified, respectively, in new Claims 56 and 57. Also, the cited references, separately or together, do not teach or suggest the materials specified in new Claims 59-62.

Therefore, new dependent Claims 56-62 also meet the requirements of 35 U.S.C. §103(a) over Rocchio et al. in view of Niijima et al.

INFORMATION DISCLOSURE STATEMENT

An Information Disclosure Statement (IDS) is filed concurrently herewith. Entry and consideration of the IDS are respectfully requested.

Applicants believe that the present application is in condition for allowance. A Notice of Allowance is respectfully requested. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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